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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/650,505	08/27/2003	Yosuke Inomata	81872.0051	6972

26021 7590 10/13/2006

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EXAMINER

OLSEN, ALLAN W

ART UNIT PAPER NUMBER

1763

DATE MAILED: 10/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/650,505	Applicant(s) INOMATA ET AL.	
	Examiner Allan Olsen	Art Unit 1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13-15, 18-20, 23-37, 39 and 40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 20 is/are allowed.
- 6) ☒ Claim(s) 13-15, 18, 19, 23-37, 39 and 40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>Aug 30, 2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 6, 2006 has been entered.

Claim Objections

Claim 13 is objected to because of the following informality: in line 6, "forming fine fixtures" should read, --forming fine textures--. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 13, 14, 18, 19, 23-27, 30, 32-36 and 39 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 5,254,215 issued to Terakado et al. (hereinafter, Terakado).

Terakado teaches a reactive ion etching method wherein a metallic mesh shadow mask is placed above a silicon substrate to be etched (column 6, lines 49-63). Terakado teaches using a mask having about 44% open area, which corresponds to the claimed 40%, column 6, lines 62-63). As Terakado discloses the same process as

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being claimed by applicant, Terakado is expected to achieve the same results. As such, Terakado's process would inherently form fine fixtures on the substrate while cleaning the plate.

Claims 13-15, 18, 19, 23, 25, 26, 30, 32-34, 36, 37 and 39 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 4,523,971 issued to Cuomo et al. (hereinafter, Cuomo).

Cuomo teaches a reactive ion etching method wherein a metallic shadow mask is placed above a silicon substrate to be etched (column 4, lines 50-53). Cuomo teaches the mask may be placed at a distance of a few millimeters to tens of millimeters from the substrate, for example 5 mm (column 6, lines 33-36, column 7, lines 1-2). As Cuomo discloses the same process as being claimed by applicant, Cuomo is expected to achieve the same results. As such, Cuomo's process would inherently form fine fixtures on the substrate while cleaning the plate.

Claims 13-14, 18, 19, 30, 31, 34, 36, 39 and 40 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 5,015,331 issued to Powell.

Powell teaches a reactive ion etching method wherein a grid comprising aluminum is placed above a silicon substrate to be etched (figure 5, column 4, lines 8-12).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over one of Terakado and Cuomo in view of US Patent 6,316,289 issued to Chung.

Neither Terakado nor Cuomo teach forming the plate member by laminating a plurality of spaced apart long members.

Chung teaches forming a standoff mask by laminating a plurality of spaced apart long members.

It would have been obvious to one skilled in the art to form the standoff mask according to the method taught by Chung because Chung teaches that this provides a durable and precise masks (column 4, lines 38-48).

Response to Arguments

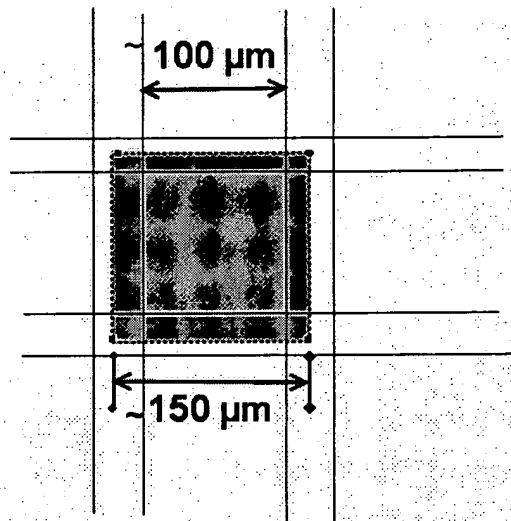
Applicant's arguments, with respect to Ikeda as they relate to the claims as amended, have been fully considered and are persuasive. The rejections relying on Ikeda have been withdrawn.

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Applicant's other arguments filed June 6, 2006 have been fully considered but they are not persuasive. With respect to Terekado, applicant acknowledges that in Terekado, a structure is disclosed wherein a metallic mesh shadow mask covers a silicon substrate that is to be etched. However, applicant contends that Terekado's mask is used for a different purpose from that of the claimed mask. Also, applicant asserts that Terekado fails to teach or suggest the production of fine texture on the surface of the substrate to be etched.

The examiner agrees that Terekado teaches placing a mask over the substrate as a means of collimating light. Nevertheless, a mask so placed will inherently function in the same manner as the claimed mask. Just because Terekado is silent about the mask inhibiting plasma from reaching the substrate does not mean that the mask does not do so. With respect to the Terekado failing to teach or suggest the production of fine texture on the surface of a substrate, the examiner notes that figures 2, 4, 5 and 6 of Terekado depict such a structure.

Applicant also argues that the examiner was incorrect in stating that Terekado teaches a mask with an open area ratio of 40%. Applicant states that the wire mesh mask of Terekado having a 50 μm line width and 100 μm space width has an open area ratio of 67 % (i.e., $100/(100+50) = 67\%$). Using the following methodology, the examiner arrives at an open area ratio of about 44% corresponding to the claimed 40%. Terekado's wire mesh would have a "unit cell" indicated below by the shaded area. The total area of the unit cell is $\sim 22,500 \mu\text{m}^2$. The total open area within the unit cell is $\sim 10,000 \mu\text{m}^2$. Therefore, the percentage of open area is about $\sim 44\%$.



With respect to Cuomo applicant argues:

Cuomo teaches an ion beam etching method that uses grids 34 and 35 positioned above a substrate. Applicant asserts that grids 34 and 35 are not comparable to the claimed plate that inhibits a portion of the plasma from reaching the substrate.

Additionally, applicant argues that Cuomo's teaching of a 5 mm distance between a grids and a substrate being etched is the distance that is needed to accelerate an ion, between the grid and the substrate, up to 200 eV whereas the claimed spacing is selected so as to trap silicon compounds between the plate and the substrate.

Therefore, applicant concludes, that the distance between the plate and the substrate in the present invention is inherently different from the distance taught by Cuomo. Also, applicant argues that Cuomo discloses an ion beam etching method for bombarding accelerated ion beams onto a substrate but fails to teach or suggest etching by a reactive ion etching method.

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The examiner's position is similar to that set forth above regarding Terekado. Just because Cuomo places a grid over a substrate that is being etched for a different reason from that discussed by applicant, does not mean that Cuomo's grid would function differently from applicant's claimed plate. Likewise, while Cuomo's spacing of 5 mm may be determined by the need to achieve a particular eV, that does not negate the fact that the spacing is the same as that claimed by applicant. Regarding applicant's assertion that Cuomo fails to teach reactive ion etching, the examiner calls applicant's attention to column 4, line 7 wherein Cuomo discloses the use of gases that form reactive ionic species in plasma discharges.

Allowable Subject Matter

Claim 20 is allowed.

Conclusion

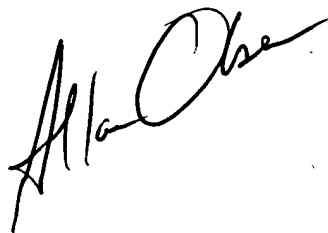
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allan Olsen whose telephone number is 571-272-1441.

The examiner can normally be reached on M, W and F: 1-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in black ink, appearing to read 'Allan Olsen', is written over a horizontal line.

Allan Olsen
Primary Examiner
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